ATOM USERS' GROUP CANADA
Newsletter #3

The Users' Group continues to grow, and with it the size of the Newsletter. We have members from coast to coast and from north of the Arctic Circle to south of the border. Contributions continue to flow in from all over the place. This is terrific and enables the sharing of information which is the most valuable function of the Group. There is quite a lot of work involved in preparing and formatting articles for inclusion. If stuff is sent in the form of an article ready for inclusion, this makes the preparation a lot easier. If you can send things in on cassette, either as a listing or in WordPack format, this is super. But send it anyway. Just keep it flowing and while you are writing in, why not say which part of the Newsletter you find most useful or send your ideas for improving it. All cassettes will be returned.

Back issues: Copies of NL-#1 or NL-#2 can be obtained by sending $3.00. Sending $5.00 will get you NL-#1 and NL-#2 together with the introductory NL-#0.

John Wood
April 1983

This Newsletter is published by Atom Users' Group Canada, 812 Cabot Trail, Milton, ONT. L9T 3M8 for the benefit of members of the Group.

Contents

Many thanks to the following who sent items for the Newsletter:
C.R. Zinck -Armdale N.S.
Fred Springer -Burlington ONT.
Daniel Dulong -Kirkland Quebec.
Colin Hinz -Saskatoon SASK.
Alan Hepburn -Georgetown ONT.
Robert Paquette -Chelmsford ONT.
Reg Nelson -Stayner ONT.

B.B.C. BASIC FOR THE ATOM

By C.R. Zinck

INTRODUCTION:

A conversion board is available from Acorn which will allow ATOM owners to use the B.B.C. Basic language. The price for this board, (in Oct '82) was f43 plus f2 for shipping. At the present rate of exchange this comes to about $88 Canadian. The board is available directly from:

Acorn Computers
Fulbourn Rd.
Cherry Hinton
Cambridge CB1 4JN

To avoid the inevitable Canada Post foul-up, (my original mail order never arrived in U.K.) I suggest you phone your order in and use VISA. The phone number is 0223 245200.

DESCRIPTION:

The board, as supplied, carries the B.B.C. BASIC ROM, an operating system ROM, 2K of RAM, a socket for a utility ROM, and the necessary circuitry to interface with the ATOM.

The B.B.C. BASIC language is very close to MICROSOFT BASIC with the addition of some rather neat bells and whistles. The complete command set is listed at the end of this article.

The user can select B.B.C. or ATOM BASIC from the keyboard, or a permanent link can be installed. Most users will probably opt for the keyboard mode as this will allow either ATOM or B.B.C. programs to be run at will.

The board comes with a fairly extensive booklet detailing the installation and the BASIC command set. Explanation of the latter is rather skimpy so a previous knowledge of extended BASIC would be a help.

INSTALLATION:

Procedure is simple and can be done in a very short time.

The board is 3.5" x 6" and is mounted in the ATOM by removing several chips on the ATOM board, plugging the B.B.C. board into the empty sockets, and transferring the chips removed to the B.B.C. board. If you are using the TIMEDATA memory board, this will need to be removed and mounted externally. More on this later. The ATOM must be fitted with full 12K RAM and the VIA chip to fully support the B.B.C. board.

ADVANTAGES:

(a) Since the B.B.C. BASIC closely resembles MICROSOFT, many published programs for other machines can now be directly entered into the ATOM with little or no conversion. As well, the user can now write more portable programs.

(b) Some rather neat commands are included. Some of these are as follows:

AUTO: gives automatic line numbering.
CHAIN: loads and runs specified programs.
DELETE: deletes specified lines.
EVAL: evaluates expressions within strings.
LISTO: formats listings.
PAGE: defines text areas.
RENUMBER: renumbers defined lines.
RESTORE(X): allows RESTORE of a defined or calculated line number.

(c) A complete two-pass assembler is included onboard, and is similar to the ATOM, except that labels can now be in plain English, rather than the ATOM format of LL(1), etc.

(d) One of the most unusual and useful features of B.B.C. BASIC is the PROCEDURE. This is a very sophisticated type of sub-routine with powerful parameter passing abilities and the ability to define LOCAL variables with the PROCEDURE.

(e) Variable names can be any length, but in contrast to many BASICs, the whole word is recognised, rather than just the first two letters.

DISADVANTAGES:

These could probably be more aptly described as inconveniences rather than disadvantages.

(a) No schematic is supplied with the board.

(b) Very few vector locations are given in the handbook. (e.g. If you need a line feed for your printer, where is the "char not sent to printer" hook?)

(c) I/O port addresses are not given.

(d) Memory expansion is cumbersome, due to the differing memory mapping. (See end of article.)

(e) The ATOM DOS and disc cannot be used with the B.B.C. BASIC.

(f) Graphic functions are confusing.

(g) Colour is not supported.

(h) No PRINT USING command is included, but by setting bit patterns into the variable @%, and using TAB's, formatting can be quite easily achieved.

(i) My particular board does not support lower-case. I do not know whether this is a fault in the board itself or if this is normal, although the manual refers to the allowed use of lower-case.
(If anyone out there has had a similar experience, or if yours works, I would like to know.)

SUMMARY:

I consider the B.B.C. BASIC card to be a very worthwhile addition to the ATOM. The user can now access a much greater range of pre-written programs and tutorials, as well as producing programs which are more portable from machine to machine.

APPENDIX 1

MEMORY EXPANSION:

As mentioned earlier, when using the B.B.C. board, memory expansion becomes somewhat difficult.
Firstly, if you are presently using the TIMEDATA board internally, this must be removed and connected to the expansion bus connector externally.

Secondly, since memory allocation is different for the ATOM and B.B.C. modes, deselecting and decoding become a bit of a chore. Also, because of this the maximum contiguous RAM allowed in the B.B.C. mode is 16K.

All is not lost, however. TIMEDATA have recognised the existence of this problem, and have produce a couple of sheets detailing all combinations possible for using their expansion board with the B.B.C. conversion.

If you send me a 32c stamp, I will send you a copy.
My address is:

Bob Zinck
Lewis Lake
R.R. 3
Armdale, N.S.
B3L 4J3

APPENDIX 2

BASIC Keywords:

ABS	DEG	GOSUB	LOG	PROC	STOP
ACS	DELETE	GOTO	LOMEM	RAD	STR$
AND	DIM	HIMEM	MID$	READ	STR$~
ASC	DIV	IF	MOD	REM	STRING$
ASN	DRAW	INKEY	MODE	RENUMBER	TAB
ATN	ELSE	INKEY$	MOVE	REPEAT	TAN
AUTO	END	INPUT	NEW	REPORT	THEN
BGET#	ENDPROC	INPUTLINE	NEXT	RESTORE	TIME
BPUT#	EOR	INPUT#	NOT	RETURN	TO
CALL	ERL	INSTR	OFF	RIGHT$	STOP
CHAIN	ERR	INT	OLD	RND	TOP
CHR$	ERROR	LEFT$	ON	RUN	TRACE
CLEAR	EVAL	LEN	OPT	SAVE	TRUE
CLG	EXP	LET	OR	SGN	UNTIL
CLS	FALSE	LIST	PAGE	SIN	USR
COS	FN	LISTO	PI	SOUND	VAL
COUNT	FOR	LN	PLOT	SPC	VDU
DATA	GET	LOAD	PRINT	SQR	WIDTH
DEF	GET$	LOCAL	PRINT#	STEP	

Note: ~=shift ^

Operators and symbols are essentially the same as the ATOM, with several important differences, notably "&" for HEX ("#" in the ATOM), and ":" for multiple lines (";" in the ATOM).

INTERESTING ADDRESSES

In this issue we continue the theme of auto running programs by showing how one program can load another without the need to touch the keyboard. But first, an error correction! In NL-#2 a hash was omitted from the routine to allow any program to be auto run. Line 1 sould read: !#80=#XXXX

A.T.&P. page 193 lists ?#020A as the "read character vector". ?#20A and ?#20B normally point to #FE94 which is the start of the read character routine which was discussed in NL-#1. The high byte of the address #FE is stored in ?#20B and the low byte #94 is stored in ?#20A.

This routine is used in several places by the ATOM operating system. For example when loading a program, after printing PLAY TAPE the ATOM goes indirectly to ?#FE94 and waits for a key to be pushed before continuing. To load a program without waiting for a key to be pushed we have to redirect the pointer. A convenient choice is the end of the previous routine in ROM. ?#FE93 contains #60 which causes an immediate return to system (RTS). By changing ?#20A to #93 we change the pointer as required.

However this has to be used carefully. After loading the program the ATOM would normally be sent to ?#FE94 again to read the keyboard and find out what to do next. If the pointer is still set to ?#FE93 a machine code loop will be set up continually printing an error message and beeping. To prevent this from happening the first program which is loading the second one should reset ?#20A to #94.

As an example of how this may be used, you may have a long program in the lower text space which requires extra data stored in the upper text space. By putting the following lines at the start of your main program you can cause it to load the second part automatically.

```
10 REM AUTO LOAD ROUTINE
20 ?#20A=#93
30 *NOMON
40 *LOAD"PART-2" 8200
50 ?#20A=#94
60 *MON
```

If the main program is loaded and run with *RUN and "PART-2" is recorded immediately after it on the tape then they can be loaded and run together without having to touch either keyboard or cassette recorder. See NL-#2 for details on *RUNning a program containing arrays.

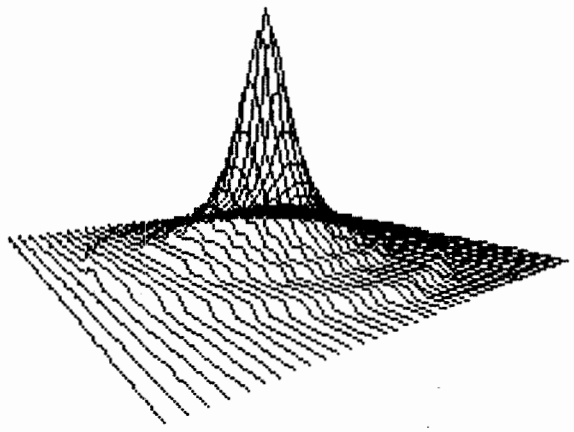
BUBBLE SORT

We are not the only ones who can include errors.
The SORT program printed in the Gladstone flyer can be made to run by changing two lines to read.

```
540 STA (#86),Y          580 BNE VV6
```

The following program will dump a screen of high resolution graphics to a Centronics 739 printer. Line 10 is only necessary if the graphics are drawn as light lines on a dark background.

```
 10zFOR A=0TO 192;MOVE0,A;PLOT6,256,A;N.A  (Reverse screen)
 20 P.$21$2$27$37$48'  (Lock screen,enable printer graphics )
 30 A=#A0;S=#20
 40 F.I=0TO#1740 S.#C0;F. J=0TO #1F;M=#80;F.K=0 TO7
 50 X=#8000+I+J;D=#20;N=1;F.L=0 TOA S.S;IF X?L&M;D=D+N
 60 N=N+N;N.;P.$D;M=M/2;N.;N.;P.';N.
 70 P.$27$19$3$6;E.   (Set printer to text and disable)
```



```
 10 REM PRINT OUT A NUMBER IN BINARY:      BY R ZINCK
 20 DIM LL(5)                          Dimension labels
 30 FOR N=1 TO 2                       Set up two pass assemble
 40 DIM P(-1)
 50 P.$21
 60[
 70:LL0 CLC                            Clear carry flag
 80 LDX @8                             Loads counter
 90 STA #80                            Puts A in memory location #80
100:LL4 ASL #80                        Shift bit into carry flag
110 BCC LL1                            If 0 branch to LL1
120 BCS LL2                            If 1 branch to LL2
130:LL1 LDA @#30                       Load 0 into accumulater
140 JSR #FFF4                          Print it out
150 JMP LL3
160:LL2 LDA @#31                       Load 1 into accumulater
170 JSR #FFF4                          Print it out
180:LL3 DEX                            Decrement counter
190 BNE LL4                            Is count 0 , if not do again
200 RTS
210]
220 NEXT N;P.$6$12                     Second assemble pass
230 P."ENTER DESIRED NUMBER"'
240 P."MAXIMUM VALUE 255"'
250 INPUT A                                    Input number
260 IF A>255 P."TOO LARGE"';GOTO230            Error trap
270 IF A<0 P."NO NEGATIVE NUMBERS"';GOTO 230      ditto
280 LINK LL0                                   Link
290 P.';GOTO 250
```

ATOM CALC — A REVIEW

The ATOM CALC program is Acronsoft's version of an electronic spreadsheet. This type of program arranges the computer's memory in the form of a grid. The user can then enter information into the various cells and can also have the computer manipulate this information in various mathematical ways.

On the Atom the grid consists of 62 columns by 255 rows with the columns being numbered A to BK, and the rows 1 to 255. If you wish to refer to a single grid you do so by referring to its column and row address. The top left hand grid is A1 and the one to its right is B1 etc.

The program is on EPROM and fits into the Utility socket of the Atom. A 28 page manual accompanies the EPROM. As with other Acorm manuals it leaves a little to be desired but it is not too bad. The last page contains a Summary of Commands just like the Word Pac Manual does. Knowledge of programming or a programming language is not necessary. To enter ATOMCALC you type in the word CALC and then press RETURN. After doing this a three line header appears. The first line contains the grid reference and the word ATOMCALC. The second line contains a copyright and the third lines shows a prompt (<--) which follows information as it is typed in.

The area under the header is one section of the sheet consisting of 13 rows deep and 4 columns wide. The cell that you are in is highlighted by the cursor. This can be moved about using the cursor control keys.

Data can be saved on cassette or on disc. However to save info on disk you must call up the disk operating system before using the program since there is no way of accessing the disk once you're in the program. You could press BREAK, if you forgot at the beginning, and then call up the DOS and reenter by typing CALCR and the pressing the LOCK key. If you don't you could loose your data.

Some Advantages over other similar types of programs:
You can set the width of each column up to 32 characters.
You can block replicate data.
The program incorporates a scientific calculator which features standard mathematical and trigonometrical functions and constants.
Alternate print-outs are available. One gives all data and calculations within a defined bock. The other prints out the contents of the sheet in tabular form as seen on the screen.

DEALERS ANNOUNCEMENTS

Two new dealers are now handling the Acorn Atom. These are:
Microcomputer Clinic, 327 Pine Street, Nanaimo, B.C.
and Sonics Northern in Sudbury, Ontario.

Prices are coming down. The minimal Atom with 8K ROM/ 2K RAM is now $200. The expanded Atom with 12K ROM/ 12K RAM is $350. The BBC ROM board is available at $160 and the disc pack is now $650.

These prices are approximate. see your dealer for a firm figure.

HARDWARE

Many members are developing hardware for the Atom. Coupled with that available through dealers there is now a wide range of add-ons.

Gordon Larsen reports that a Shugart SA400L can be added to the Atom disk pack to give a second drive. The Shugart simply plugs in and is completely compatible with the Atom DOS. Disks formatted on the Shugart are transportable directly to the Olivetti drive included with the original Disk Pack. Gordon would like to hear from anyone else working in this area, particularly anyone who knows uses for the disk commands "SPOOL" and "VDU". His address is: 124 Wylie Place, Fort McMurray, ALTA. T9H 4R4.

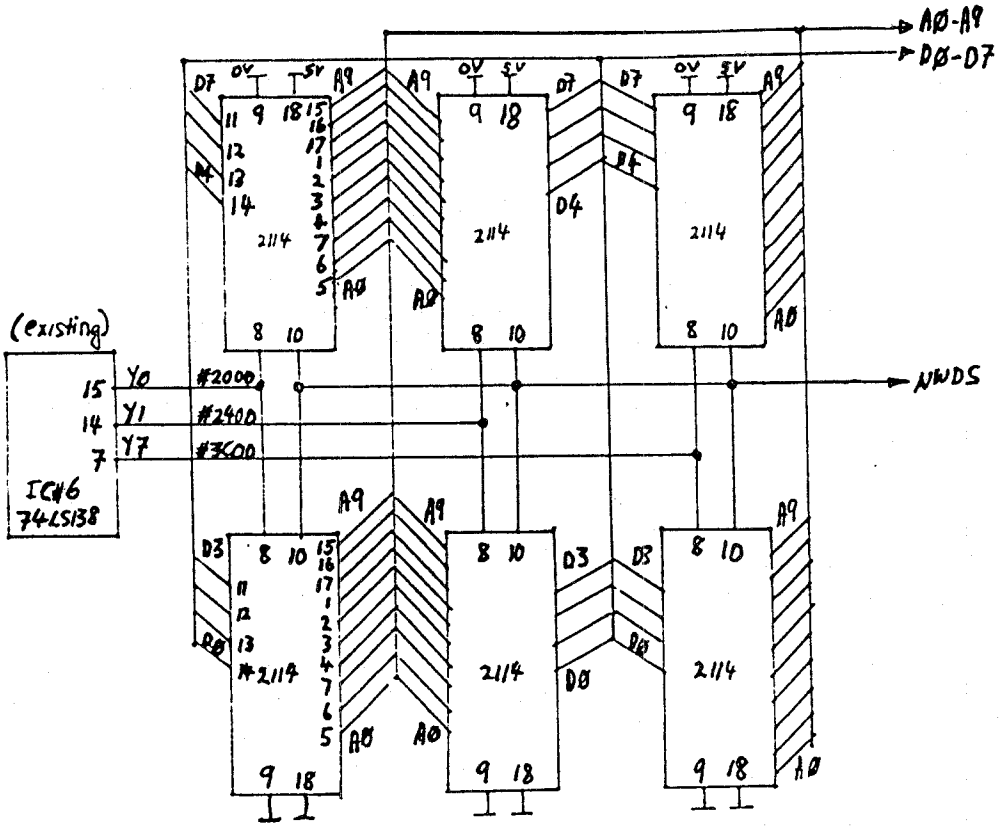
Alan Hepburn has extended his Atom bus using a 64-way flat ribbon. He found it necessary to add buffers on the extension, virtually copying IC2 IC3 and IC4. He also added 150 ohm pull down resistors on the address lines. This allowed him to extend the bus up to 30 inches. DIN 41612 flat cable connecters are stocked by Panduit Canada Ltd. 140 Amber Street, Markham, ONT. L3R 3J8. Alan has built several expansion cards which are installed in a Schroff chassis. These include a ROM selector board, memory expansion, a floppy disc controller driving a Shugart SA400L and an EPROM programmer. He recommends "Programming and Interfacing the 6502, With Experiments" by Marvin L deJong, published by Sams & Co., Indianapolis.

Robert Paquette sends schematics for two memory boards, printed in this Newsletter. The smaller 3K board utilises IC6 which is already decoding the chip select lines for #2000 to #2800 and #3C00 to #4000. All the other lines can be picked up on PL6/7.

The January edition of "InfoAge" contains a schematic for an RS232 interface for the Atom. A simplified form of this could be used to produce the TTL level signals required by some accoustic couplers which recently came on the surplus electronics market. The magazine also carried a listing for a "bare bones" driver routine.

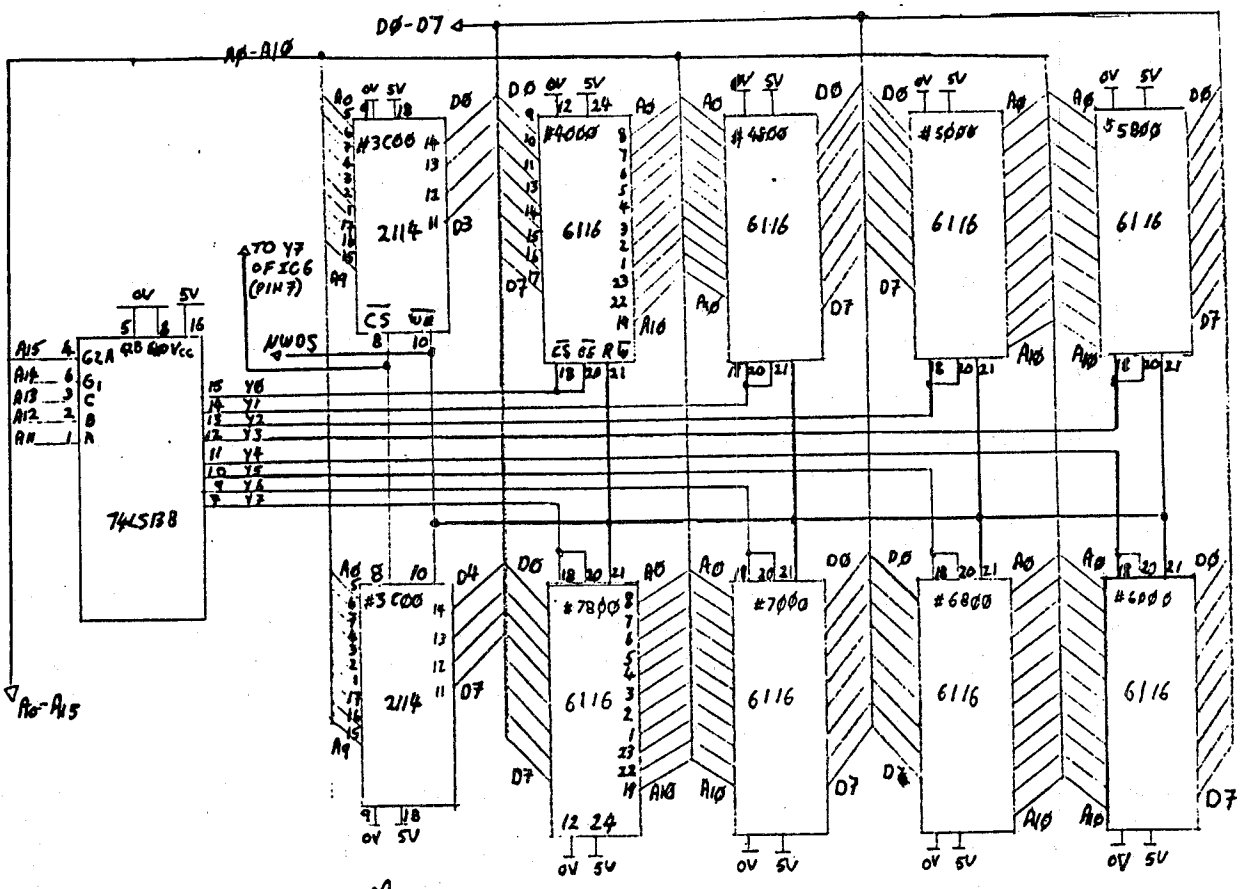
Colin Hinz of 1118 College Drive, Saskatoon, SASK. S7N 0W2 is planning to design and set up a bulletin board system for Atom users. This could be either a simple, inexpensive system utilising parts of the existing cassette operating system, or be based on a standard modem, which would allow interfacing with other data sources. Colin is asking for feedback from other members before he decides which way to jump.

Many members have found a ROM selector board to be very useful. Typically these allow two or four EPROMS to be installed in the Atom. Any one of these can then be called from the keyboard as the utility ROM. The latest version is the Timedata MZ 165 ROAM board which will hold up to three EPROMS and 4K of RAM. This sounds very useful alowing utilities to be *LOADed from cassette. Also for letting you develop your own routines and test them in memory space #A000 to #B000, before fixing them in ROM.



*Add a 100nfd capacitor between the power pins of each 2114.

3K RAM EXPANSION
"ACORN ATOM"
JR PAQUETTE



*Add a 100nfd capacitor between the power pins

17K RAM EXPANSION
"ACORN ATOM"
J.R. PAQUETTE

READERS ASK

Robert Paquette has recently bought the LISP program but was not able to get hold of "LISP Theory and Practice". If anyone would loan him the booklet he would be very grateful.

SOFTWARE

The Users' Group library of programs continues to grow. Reginald Nelson has sent a first rate Mortgage Analysis program. This will calculate the monthly payment and give the status after any period of T months. Options are provided to show the effect of making an extra monthly payment, changing the interest rate or the period etc.

Many of the programs have been listed in the Newsletter. However some, especially the longer ones have not been listed. Lisa Chen sent a TicTacToe game which is neatly set up and well documented. Alan Hepburn provided a sophisticated disassembler.

To get the most out of this library we need to evolve some way of distributing it on cassette. Local meetings are one way when members live close enough. For others a "tree" with distribution branches may be the way. Any suggestions?

The library at the present includes:

TEXTPRO	TURTLE	MORSE
TICTACTOE	CRAWLER	MORTGAGE
DISASSEMBLER	LUNACY	CAMEL

HAPPY LOADINGS

Several tips have been sent to improve the cassette operation. One or the other may be helpful to you.

1. Put an attenuater or filter in the line to or from the cassette recorder.
2. Turn the printer off when loading or saving.
3. Disconnect the cassette out lead when loading and the cassette in lead when saving.
4. Keep the recorder well away from the TV or monitor, ensure that the cables are not twisted together.
5. Avoid the end few inches on the tape especially if both ends of the tape are used.
6. Do not use both sides of a tape.
7. Replace IC46 an LM358. Two members reported that this cured things after the Atom had become very volume sensitive.

LOCAL GROUP NEWS

There have been three meetings of the Halton and Surrounding Region local group. Attendance has grown from meeting to meeting. The next meeting will be on Tuesday, May 3rd. at St. Marks school, 2145 Upper Middle Road, (between Brant Street and Guelph Line) in Burlington.

The meeting will start at 7:30. Tim Mackinnon will be giving a short talk on poking in high resolution graphics and Alan Hepburn will have some of his hardware extensions. There will be a small charge to cover the cost of the room. This will likely be $1 to $2 dependending on how many people come. See Fred Springer on the night.

```
 10 REM morse code tx :DANIEL DULONG -VE2GAD
 20 P.$12;P.'''''''"     WAIT..."
 30 DIM C(0),UU(13),VV(25)
 40 P.$21; FOR A=1 TO 2; DIM P(-1)
 50 [
 60\ generate tone
 70:UU0 LDA L
 80 LDY #22B
 90:UU1 LDX #22A
100:UU2 DEX
110 BNE UU2
120 EOR @4
130 STA L
140 DEY
150 BNE UU1
160 RTS
170\ scan keyboard and read key
180:UU3 LDA #B001;CMP @#7F;BEQ UU4
190 JSR #FE71
200 CPY @#D;BEQ UU5
210 CPY @#0;BEQ UU6
220 CPY @#4;BEQ UU7
230 CPY @#2;BEQ UU13
240 TYA;CLC;ADC @#20
250 CMP @#3F;BEQ UU9
260 CMP @#3E;BEQ UU10
270 CMP @#3D;BEQ UU11
280 CMP @#3C;BEQ UU12
290 JSR #FFF4
300 STA C;RTS
310:UU4 JSR #FE71
320 CPY @#17;BEQ UU8
330 TYA;CLC;ADC @#20
340 JSR #FFF4
350 STA C;RTS
360:UU5 LDA @#D;STA C;RTS
370:UU6 LDA @#20;JSR #FFF4;STA C;RTS
380:UU7 LDA @#5E;JSR #FFF4;STA C;RTS
390:UU8 LDA @#27;JSR #FFF4;STA C;RTS
400:UU9 LDA @#2F;JSR #FFF4;STA C;RTS
410:UU10 LDA @#2E;JSR #FFF4;STA C;RTS
420:UU11 LDA @#2D;JSR #FFF4;STA C70;RTS
430:UU12 LDA @#2C;JSR #FFF4;STA C;RTS
440:UU13 LDA @#5C;JSR #FFF4;STA C;RTS
450]
460 NEXT A; P.$6
470 VV(5)=115;VV(6)=87;VV(7)=68;VV(8)=54;VV(9)=43;VV(10)=35
480 VV(11)=31;VV(12)=28;VV(13)=26;VV(14)=18;VV(15)=10
490 VV(16)=9;VV(17)=8;VV(19)=6;VV(20)=5
500 VV(21)=4;VV(22)=3;VV(23)=2;VV(24)=1;VV(25)=0
510 P.$12
520 P.''''"     special characters:"''
530 P."     @=WAIT SIGNAL"',"     >:ERROR"'
540 P."     <:END OF TRANSMISSION"'"     \:BK"'"     ^:CQ"''''
550 P."  (PRESS ANY KEY TO CONTINUE.)";LINK #FFE3
560mP.$12;P.'''''''"ENTER SPEED OF TRANSMISSION"
570 INPUT'"(BETWEEN 5 AND 25 WPM" V
580 IF V<5 OR V>25 GOTO m
590 IF V>4 AND V<=15 D=80;G=240;E=3
600 IF V>15 AND V<=20 D=60;G=180;E=2
610 IF V>20 AND V<=25 D=50;G=150;E=1
620 P.$12;L=#B002;?#22A=170;REM Tone Pitch
630dLINK UU3
640 IF ?C=#41 GOS.i;REM lines 670 to 920 a-z
650 IF ?C=#42 GOS.a;GOS.c;GOS.g
660 IF ?C=#43;GOS.j;GOS.c;GOS.j
670 IF ?C=#44 GOS.a;GOS.c;GOS.h
680 IF ?C=#45 GOS.b
690 IF ?C=#46 GOS.h;GOS.c;GOS.j
700 IF ?C=#47 GOS.a;GOS.c;GOS.j
710 IF ?C=#48 GOS.b;GOS.c;GOS.g
720 IF ?C=#49 GOS.h
730 IF ?C=#4A GOS.b;GOS.c;GOS.e
740 IF ?C=#4B GOS.a;GOS.c;GOS.i
750 IF ?C=#4C GOS.i;GOS.c;GOS.h
760 IF ?C=#4D GOS.f
770 IF ?C=#4E GOS.j
780 IF ?C=#4F GOS.e
790 IF ?C=#50 GOS.i;GOS.c;GOS.j
800 IF ?C=#51 GOS.f;GOS.c;GOS.i
810 IF ?C=#52 GOS.b;GOS.c;GOS.j
820 IF ?C=#53 GOS.g
830 IF ?C=#54 GOS.a
840 IF ?C=#55 GOS.b;GOS.c;GOS.i
850 IF ?C=#56 GOS.h;GOS.c;GOS.i
860 IF ?C=#57 GOS.b;GOS.c;GOS.f
870 IF ?C=#58 GOS.j;GOS.c;GOS.i
880 IF ?C=#59 GOS.j;GOS.c;GOS.f
890 IF ?C=#5A GOS.f;GOS.c;GOS.h
900 IF ?C=#30GOS.e;GOS.c;GOS.f;REM lines 930 to 1020 0-9
910 IF ?C=#31 GOS.i;GOS.c;GOS.e
920 IF ?C=#32 GOS.h;GOS.c;GOS.e
930 IF ?C=#33 GOS.g;GOS.c;GOS.f
940 IF ?C=#34 GOS.g;GOS.c;GOS.i
950 IF ?C=#35 GOS.h;GOS.c;GOS.g
960 IF ?C=#36 GOS.j;GOS.c;GOS.g
970 IF ?C=#37 GOS.f;GOS.c;GOS.g
980 IF ?C=#38 GOS.e;GOS.c;GOS.h
990 IF ?C=#39 GOS.e;GOS.c;GOS.j
1000 IF ?C=#2E GOS.i;GOS.c;GOS.i;GOS.c;GOS.i;REM .
1010 IF ?C=#2C GOS.f;GOS.c;GOS.h;GOS.c;GOS.f;REM ,
1020 IF ?C=#3B GOS.j;GOS.c;GOS.j;GOS.c;GOS.j;REM ;
1030 IF ?C=#3A GOS.e;GOS.c;GOS.g;REM :
1040 IF ?C=#3F GOS.h;GOS.c;GOS.f;GOS.c;GOS.h;REM ?
1050 IF ?C=#2F GOS.a;GOS.c;GOS.h;GOS.c;GOS.j;REM /
1060 IF ?C=#40 GOS.i;GOS.c;GOS.g;REM wait @
1070 IF ?C=#5C GOS.a;GOS.c;GOS.g;GOS.c;GOS.a;REM BK \
1080 IF ?C=#2D GOS.j;GOS.c;GOS.h;GOS.c;GOS.i;REM -
1090 IF ?C=#3C GOS.i;GOS.c;GOS.i;GOS.c;GOS.b;REM end of trans
1100 IF ?C=#3E GOS.g;GOS.c;GOS.h;GOS.c;GOS.g;REM error >
1110 IF ?C=#27 GOS.i;GOS.c;GOS.e;GOS.c;GOS.b;REM '
1120 IF ?C=#5E GOS.j;GOS.c;GOS.j;GOS.c;GOS.f;GOS.c;GOS.i;REMCQ^
1130 IF ?C=#20 G.z
1140zFOR N=0 TO VV(V);WAIT;NEXT N
1150 GOTO d
1160a?#22B=G;LINK UU0;R.;REM dah
1170b?#22B=D;LINK UU0;R.;REM dit
1180cFOR N=0 TO E;WAIT;NEXT N;R.
1190eGOS.a;GOS.c;GOS.a;GOS.c;GOS.a;R.
1200fGOS.a;GOS.c;GOS.a;R.
1210gGOS.b;GOS.c;GOS.b;GOS.c;GOS.b;R.
1220hGOS.b;GOS.c;GOS.b;R.
1230iGOS.b;GOS.c;GOS.a;R.
1240jGOS.a;GOS.c;GOS.b;R.
```

Analysis for Canadian Mortgages by: Reginald Nelson

```
 10 P.$12;@=0;REM IF DISPLAY OF %I,%U,%Y IS DESIRED, SET Z=9
 20 REM TO CANCEL DISPLAY OF %I,%U,%Y RESET Z=0
 30 P.'"          analysis"'
 40 P."             FOR "'
 50 P."      canadian mortgages"''
 60 REM BY: R.E.NELSON (1983)
 70 P." CALCULATES MONTHLY PAYMENTS"'" FOR ALL!! MORTGAGES:-"'
 80 P." FOR E.O.P. AT 'T' MONTHS;"'
 90 P."   CALCULATES:-"'
100 P." EXACT BALANCE; PRINCIPAL CREDIT;"'
110 P." INTEREST CHARGED AND"'" TOTAL AMOUNT PAID."';GOS.q
120 GOS.y
130 P.'"   ---enter mortgage data---"'';@=0;X=0;%O=0;T=0;%F=0
140 FIN."LOAN $="%A
150 FIN."INTEREST, (S.A.R.%)="%R;@=0;IF X=3 G.170
160 IN."LENGTH OF LOAN, MONTHS="M
170 %I=((1+%R/200)^(1/6)-1);IF Z<=0 G.190
180 FP."MONTHLY INTEREST FACTOR="'%I'
190 %U=((1-(1+%R/200)^(-M/6))/%I);IF Z<=0 G.210
200 FP."MONTHLY PAYMENT MULTIPLIER="'%U'
210 %P=%A/%U;FP."MONTHLY PAYMENT    $="%P';GOS.r
220 FIN."ENTER ROUNDED PYMT$="%P
230 IN."ANALYSIS FOR 'T' MONTHS="T;@=0;P.$12
240 %Y=((1-(1+%R/200)^(-T/6))/%I);IF Z<=0 G.260
250 P."M.PYT.MULT."T"MONTHS=";FP.%Y'
260 IF X<=0 OR X>=2 G.290
270 P.$12;P.';FIN." OVERRIDE PAYMENT   $="%O;%P=%P+%O
280 FP." NEW MONTHLY PAYMENT$="%P';GOS.q;GOS.x;@=0
290 %B=(%A-%P*%Y)/(1-%I*%Y)
300 %C=%A-%B;%E=%P*T;%D=%E-%C;@=0
310 P.'"  ------mortgage  status------"'';IF X=7 GOS.v
320 P."  ------after " T" payments-----"'
330 P.'"BALANCE AT "T" PYTS $=";FP.%B'';IF X=7 GOS.u
340 FP."PRINCIPAL CREDIT   $="%C''
350 FP."INTEREST CHARGED   $="%D'';IF X=7 GOS.w
360 FP."TOTAL AMOUNT PAID  $="%E';GOS.q;GOS.y
370 P.'"  NEXT ACTION:-"'';IF X>=1 G.450
380 P."   1- EXTRA MONTHLY PAYMENT ?"'
390 P."   2- CHANGE'T'MONTHS       ?"'
400 P."   3- CHANGE SAR%(INT.RATE) ?"'
410 P."   4- IN DEPTH REPORT       ?"'
420 P."   5- PAY OFF MTGE NOW      ?"'
430 P."   6- START OVER            ?"'
440 P."   7- MAKE A LUMP PAYMENT   ?"''
450 P.'" OPTIONS ARE; 1,2,3,4,5,6 OR 7"'';IN." CHOICE IS"X
460 IF X=1 G.270
470 IF X=2 G.230
480 IF X=3 G.150
490 IF X=4 G.530
500 IF X=5 G.630
510 IF X=6 G.130
520 IF X=7 G.t
530 %J=(%P-%A*%I)/%P*100;@=0;P.$12
540 FP.'"PER CENT PRINC'L, 1ST  PAYMENT="'%J';GOS.q
550 P."---MTGE DATA AT "T"TH PAYMENT---"';%H=%B*%I
560 FP."PRINC'L/MONTH     $="%P-%H'
570 %K=(%P-%H)/%P*100;FP."PER CENT PRINC'L   ="%K'
580 FP."INTEREST/MONTH    $="%H'
590 %L=%C/%A*100;FP."PER CENT MTGE PAID="%L'
600 %N=(6*(LOG%P-LOG(%P-%I*%B))/(LOG(1+%R/200)));GOS.s
610 P.'" REMAINING AMORTIZATION PERIOD"'
620 P." ="VAL$G"."$W "MONTHS"';GOS.q;GOS.y;G.450
630 P.$12;P.'" --SUMMARY OF COSTS AT PAYOFF--"';GOS.q
640 IF %F>0 AND X=5 GOS.v
650 %H=%B*%I;FP."FINAL INTEREST    $="%H'
660 FP."FINAL PAYMENT     $="%B+%H';GOS.q;IF X=5 GOS.z
670 FP."MTGE BALANCE      $="%A-%B-%C'';IF X=5 GOS.u
680 FP."PRINC'L REPAID    $="%B+%C''
690 FP."TOTAL INTEREST    $="%D+%H''
700 FP."TOTAL AMOUNT PAID $="%B+%C+%D+%H';GOS.q
710 GOS.y;G.450
720 END
730qDO P."=";U.C.=32
740 P.';R.
750y P." PRESS SPACE BAR TO CONTINUE"';LINK($FFE3;P.$12;R.
760rS=10;F.O=0 TO 1;S=S*10;N.O
770 DIMT12,G12,H12
780 $T="00000000";$T=$T+(LEN(T)-2);$G=$T
790 %P=%((%P*S+5)/10);STR%P,G
800 $T+LEN(T)=$G;$G=$T
810 J=LEN(G);F.O=0 TO LEN(G);IF G?O=46 J=O
820 N.;$G+J="";$H=$G+(LEN(G)-2);$G+(LEN(G)-2)=""
830 P."ROUNDED PAYMENT    $=",VAL$G"."$H';R.
840s S=100;P.$14
850 DIMQ12,G12,W12
870 $Q="00000000";$Q=$Q+(LEN(Q)-0);$G=$Q
880 %N=((%N*S+5)/100);STR%N,G
890 J=LEN(G);F.O=0 TO LEN(G);IF G?O=46 J=O
900 N.;$G+J="";$W=$G+(LEN(G)-0);$G+(LEN(G)-0)="";R.
910t FIN." LUMP PAYMENT $="%F;GOS.q;G.140
920vP."  --INCLUDING LUMP PAYMENT--"';R.
930u %C=%A-%B;%C=%C+%F;R.
940w %E=%P*T;%E=%E+%F;R.
950x F.W=0 TO 300;WAIT;N.W;R.
960z %C=%A-%B;%C=%C+%F;%C=%C-%F;%C=%A-%B;R.
```

The analysis is menu driven. If option 7 is chosen -"MAKE A LUMP PAYMENT", then when the Atom promts for input of "Loan $=": Enter: %B-%F

CRAWLER

```
 1 GOTO10
 2 BY ROBERT PAQUETTE
 3 A VARIATION OF xxCRAWLERxx BY G.HILLEBRAND -PUBLISHED IN:
 4 INTERFACE
 5 THIS VERSION FIRST PUBLISHED IN THE NEWSLETTER OF:
 6 THE ATOM USERS' GROUP CANADA
 7 IF YOUR ATOM DOES NOT HAVE THE TOOLBOX. DO THE FOLLOWING.
 8 DELETE LINES 10,490,550.
 9 DELETE THE WORD POP FROM LINES 510,570
10 P.$21;LINK$AF00;P.$6
20 GOS.590
30 A=0;B=0;DIM V(5);!V=$04081020;V!4=$102
40 P.$21;DIM NN10,P(-1);[
50: NN0 LDA @0;STA $B000;LDA $B001;EOR @16;STA $90;RTS\A UP
60: NN1 LDA @3;STA $B000;LDA $B001;EOR @8;STA $91;RTS\A LEFT
70: NN2 LDA @1;STA $B000;LDA $B001;EOR @8;STA $92;RTS\A RIGHT
80: NN3 LDA @6;STA $B000;LDA $B001;EOR @8;STA $93;RTS\A DOWN
90: NN4 LDA @4;STA $B000;LDA $B001;EOR @2;STA $94;RTS\B UP
100: NN5 LDA @2;STA $B000;LDA $B001;EOR @4;STA $95;RTS\B LEFT
110: NN6 LDA @8;STA $B000;LDA $B001;EOR @1;STA $96;RTS\B RIGHT
120: NN7 LDA @6;STA $B000;LDA $B001;EOR @1;STA $97;RTS\B DOWN
130];P.$6
140 CLEAR 0;MOVE0,0;DRAW63,0;DRAW63,42;DRAW0,42;DRAW0,0
150 ?$E1=0;P.$30' CRAWL    SCORE:'A,B
160 C=30;D=40;E=30;F=4;O=3;I=2
170 PLOT 13,C,D;PLOT 13,E,F
180 F.T=1TO3;?$804D=1;?$81CD=2
190 F.U=1TO25;WAIT;N.
200 ?$804D=$40;?$81CD=$40
210 F.U=1TO25;WAIT;N.;N.
220 ?$E1=0;P.$30' CRAWL    SCORE:'A B
230e LINK NN0;Z=?$B002;F.Y=0TO1;N.
240 Z=Z;4;?$B002=Z
250 IF?$90=255;G.390;REM A UP
260 LINK NN1
270 IF?$91=255;G.400;REM A LT
280 LINK NN2
290 IF?$92=255;G.410;REM A RT
300 LINK NN3
310 IF (?$93=255)|(?$93=254);G.420
320 G.(380+O*10)
330c LINK NN4;IF ?$94=255;G.430;REM B UP
340 LINK NN5;IF ?$95=255;G.440;REM B LEFT
350 LINK NN6;IF ?$96=255;G.450;REM B RIGHT
360 LINK NN7;IF (?$97=255)|(?$97=247);G.460;REM B DOWN
370 G.(420+10*I)
380d G.e
390 D=D+1;GOS.a;PLOT13,C,D;O=1;G.c
400 C=C-1;GOS.a;PLOT13,C,D;O=2;G.c
410 C=C+1;GOS.a;PLOT13,C,D;O=3;G.c
420 D=D-1;GOS.a;PLOT13,C,D;O=4;G.c
430 F=F+1;GOS.b;PLOT13,E,F;I=1;G.d
440 E=E-1;GOS.b;PLOT13,E,F;I=2;G.d
450 E=E+1;GOS.b;PLOT13,E,F;I=3;G.d
460 F=F-1;GOS.b;PLOT13,E,F;I=4;G.d
470a P=C/2+(47-D)/3*32+$8000
480 Q=(?P&(V?(C&1+(47-D)%3*2))<>0)
490 IF Q=1 F.H=100TO10S.-10;BE.H,1;N.
500 IF Q=1 B=B+1;P.$30"CRAWLER B HAS WON!!!";F.X=0TO3000;N.
510 IF Q=1 POP;G.140
520 R.
530b P=E/2+(47-F)/3*32+$8000
540 Q=(?P&(V?(E&1+(47-F)%3*2))<>0)
550 IF Q=1 F.H=10TO100S.10;BE.H,1;N.
560 IF Q=1 A=A+1;P.$30" CRAWLER A HAS WON!!!"';F.X=0TO3000;N.
570 IF Q=1 POP;G.140
580 R.
590 P.$12'''       xx CRAWL xx'
600 P.'''YOU HAVE TO TRY TO LOCK'''THE 2ND PLAYER IN AND''
610 P.' LET HIM COLLIDE ON YOUR '''TRAIL...''
620 P.'         PLAYER A    PLAYER B'''UP          Q       '
630 P.'  DEL''' DOWN        A          ]'''RIGHT       F'
640 P.'           ['''  LEFT        D          +''
650 P.'' RESTART THE GAME BY SIMPLY'''PRESSING A KEY.''
660 P.' SUCCESS...YOU NEED IT!!';LINK #FFE3;R.
```

FOR SALE

Fred Springer knows of two Atoms for sale. Both are 12K RAM + 12K ROM with Word-Pack and printer interface. Asking price $400. :- 905 Glenwood, Burlington, ONT. L7T 2J8. (416) 632-2044.

Robert Paquette has an Adventure Game for sale. (If you have used Robert's Text Processor in NL-#2 you can guarantee that his game will be good.) Send $8.95 to him at 13 Hazel St., Box 2, RR#1, Chelmsford, ONT. P0M 1L0, and he will send you the game by first class mail.

see NL-4 for errors

```
 1 REM ***lunacy*** BY COLIN HINZ
20!#37E0=#8EA08F84;!#37E4=94A0948F;!#37E8=#8883958F
30DIM NN(3),MM(3),K(1,BB(5)
40P=#2800;GOS.a;REM ASM
50IF C<70;?K=#59
60IF ?K=#59 GOS.h;F.I=#8400TO#85FF;?I=A.R.%255;N.
70gF=100
80IF?K<>#59;GOS.b
90P.$6$12;?#E1=0;?#8000=#40
100IF?K<>#59;GOS.e;G.f
110GOS.c
120CU.2,4;P."THIS MACHINE WILL EXPLODE ON"
130CU.12,6;P."CONTACT"
140IF?K=#59;GOS.d
150fF.Q=0TO25;WAIT
160LI.NN0;F.I=1TO20;WAIT;N.;LI.MM0
170F.I=1TO20;WAIT;N.;N.
180IF?K=#59;?K=0;C=0
190G.g
200aP.$21
210[
220:MM0 LDX @#0C
230:MM1 LDA #37BF,X;STA #8168,X;DEX
240BNE MM1;RTS
250:NN0 LDX @#0C
260:NN1 LDA #37DF,X;STA #8168,X;DEX;BNE NN1
270RTS
280]
290P.$6;R.
300bREM BEGINNINING???(!!!!)
310CLEAR1;COLOUR3;E=A.R.%100;H=A.R.%27+6
320F.I=1TO E;A=A.R.%64;B=A.R.%64
330COLOUR(A.R.%3+1);PLOT13,A,B
340IFF>10;BEEP(A*3+10),(B/H+1)
350N.;R.
360cREM BORDER
370Q=#8000;F.I=Q TOQ+32;?I=#2A;N.
380F.I=QTOQ+511S.32;?I=#2A;N.
390F.I=Q+480TOQ+511;?I=#2A;N.
400F.I=Q+31TOQ+511S.32;?I=#2A;N.;R.
410d REM COPY IT !!!
420Q=#8000;R=#8600
430F.I=0TO511S.4;R!I=Q!I;N.;R.
440eREM REINCARNATE MATRIX
450Q=#8000;R=#8600;T=#8400;U=#85FF
460F.I=0TO511S.4;I!#8000=A.R.;N.
470F.I=0TO511;G=(I*2)?#9000+((I*2+1)?#9000)*256
480G?Q=G?R;N.;R.
490hREM MATRIX SET-UP
500F.I=#9000TO#93FFS.2;?I=I/2;I?1=(I-#9000)/512;N.
510F.L=1TO1000;I=A.R.%512;J=A.R.%512;I=I*2;J=J*2
520S=I?#9000;D=I?#9001;I?#9000=J?#9000;I?#9001=J?#9001
530J?#9000=S;J?#9001=D;N.;R.
```

The program listed above was received early in April from the the College of Engineering at the University of Saskatchewan. Colin Hinz claims that it lives up to it's name! It uses both the floating point ROM and Toolbox. Before running it for the first time set C=1.